

Del Din Green Building Education Tour



Project Profile:









The Southern European Task Force (SETAF) provides the United States Army Europe and **European Command the core of a Combined,** Joint or Army-led Task Force proficient in a full range of military and humanitarian missions requiring multi-national and multi-service commands. The US military has expanded its footprint in Vicenza to include additional elements of the 173rd Infantry Brigade Combat Team (Airborne). The new base, Caserma Renato Del Din, has been located on the west side of the disused civilian Dal Molin airport, roughly two miles from Caserma Ederle. This is one of the first installations completely developed according to the precepts of "Green Architecture" and sustainable design. It includes all of the necessary services to provide soldiers the means to live, work and play on the installation. Caserma Del Din has achieved **LEED certification under the "Leadership in Energy and Environmental Design LEED-NC)** Rating System version 2.2 for New Construction in conjunction with LEED NC Application Guide for Multiple Buildings & On-**Campus Building Projects. It is the first** military installation certified as a whole campus. ROSSER











Program Management



Del Din LEED NC overview



An Introduction to the U.S. Green Building Council & The LEED Green Building Rating System®

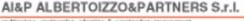
- I. USGBC Definitions & Details
- II. LEED Definitions & Details
 - A. Why Was LEED® Created
 - B. Each category of the LEED Rating System
 - 1. Category goals
 - 2. Green building aspects addressed by each credit
 - 3. LEED Certification Process















U.S. Green Building Council





Archbishop Desmond Tutu to Keynote Greenbuild in Boston

Bishop Tutu's life, work, and message demonstrate the power of transformational change. Bishop Tutu's role in ending Apartheid in South Africa and bringing reconciliation to its people will inspire us towards the transformation of our buildings to a sustainable future, and will give us an extraordinary example of social justice in action. » Download PDF

LEED For Homes Reference Guide Now Available

The LEED for Homes Reference Guide is now available for pre-order. Orders will begin shipping in April 2008. Order it now at the » USGBC Store.

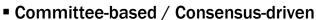
USGBC Doubles Local LEED for Homes Network

Green homes certified using LEED must complete a rigorous on-site inspection to verify performance in energy efficiency, water conservation, non-toxic materials, and other features, Local LEED for Homes Providers facilitate the process by offering expertise and the rating and verification inspections. » More

Nonprofit organization

EMISSIONS.

- Diverse membership
- Developer & Administrator of LEED Rating **System**







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Architecture Engineering Program Management



» Press Room

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» The Green Home Guide

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WEBINAR SERIES: Carbon Reduction

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LEEDTM rating system







Gives building owners and operators tools to have a measurable impact on building performance.

and operation of high performance green buildings. Promotes whole-building approach to

sustainability in 5 five key areas of human and environmental health:

sustainable site development

water savings

energy efficiency

materials selection

indoor environmental quality









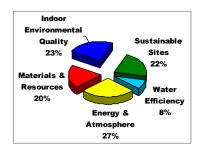




LEEDTM rating system



- Leadership in Energy & Environmental Design
- High Performance Buildings
- Prerequisites/Credits Point System
- Levels of Certification:



5-32	points
	5-32

Silver 33-38 points

Gold 39-51 points

52-69 points Platinum



Green Building Rating System

For New Construction & **Major Renovations** (LEED-NC)

Reference Guide Version 2.2

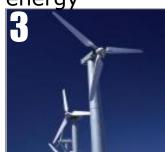
First Edition







energy



material











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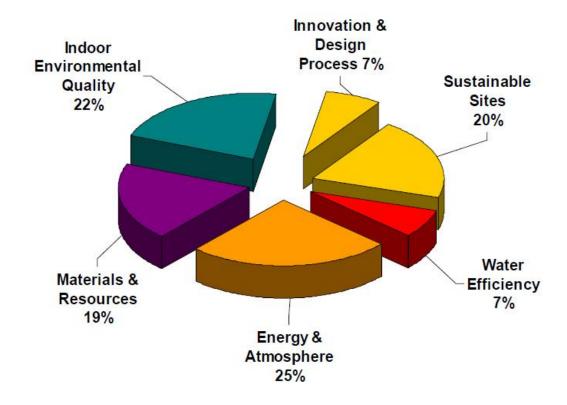


LEED NC point distribution



LEED-NC® Point Distribution

6 LEED Topic Areas









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_____ category

Goals

- Develop appropriate sites
- Reuse existing buildings and/or sites
- Protect natural and agricultural areas
- Reduce need for automobile use
- Protect and/or restore sites
- Minimize heat island effect
- Minimize light trespass

Credits

- 8 credits for 14 points
- (20%) address:
 - Site Selection
 - Community Connectivity
 - Alternative Transportation
 - Site Development
 - Stormwater Management
 - Heat Island Effect
 - Light Pollution





1 category

PREREQUISITE: CONSTRUCTION ACTIVITY POLLUTION PREVENTION

Intent
 Control erosion to reduce negative impacts on water and air quality











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category

CREDIT 1: SITE SELECTION

- Intent
 - Avoid development on inappropriate sites
 - Reduce environmental impact from the location









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1 category

CREDIT 2: DEVELOPMENT DENSITY

Intent

& COMMUNITY CONNECTIVITY

- Develop urban areas
- Protect greenfields, habitat, and natural resources



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ROSSER





category

CREDIT 3: BROWNFIELD REDEVELOPMENT

In<u>tent</u>

Rehabilitate environmentally contaminated / damaged sites, reducing pressure on undeveloped sites

Garrison continues environmental improvements at Dal Molin

While the unexploded ordnance clearing efforts continue, the U.S. Army Garrison Vicenza has begun additional environmental improvements at Dal Molin by and disposal will follow in starting the removal of decades- accordance with approved

"Operations will respect all applicable laws and be in close coordination with Italian authorities," said Col. Erik Daiga, will be installed in the future at Garrison Vicenza.

vehicle, airplane fuel and heating systems.

they vary in size, with capacities January 2009.

Prior to removal, explained Kambiz Razzaghi, the director of the Transformation Construction Management Office, the tanks will be pressure-tested to assess structural integrity.

procedures," Razzaghi said. "Soil testing will follow to determine and localize any contamination if found."

commander of the U.S. Army Dal Molin. New tanks will utilize Daiga said the underground innovative technology to include tanks were installed starting in double walls, automatic leak the 1950s and used to store detection and monitoring

"Thirty-eight tanks are storage tanks disposal is scheduled to be removed and projected to be completed by



A backhoe prepares to remove an underground storage tank from Dal Molin. (Photo courtesy of the Transformation Construction









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category

CREDIT 4: ALTERNATIVE TRANSPORTATION

- Intent Reduce pollution / land development impacts from automobile use
- 4.1 Locate within ½ mile of commuter rail OR ¼ mile of 2 or **more bus lines.** (For information only. This project did not meet the credit requirements.)
- 4.2 Bike storage with changing/shower facility for 5% of Occupants.
- 4.3 Provide low-emitting/fuel-efficient vehicles for 3% of occupants. OR; Preferred parking for 5% of vehicles. OR; Alternative-fuel refueling stations for 3% of parking capacity.
- 4.4 Parking not to exceed local zoning AND 5% preferred parking carpools. OR; No new parking for rehabilitation projects AND 5% preferred parking carpools for occupants.





















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CREDIT 5: SITE DEVELOPMENT

Intent

Provide habitat and promote biodiversity

- Conserve existing natural areas
- Restore damaged areas

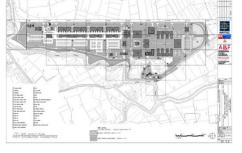
Provide a high ratio of open space to development footprint.

5.1 Limit site disturbance to 40' from bldg perimeter, 10' beyond pavement, 15' from roadways, 25' permeable surfaces. OR; Protect/restore 50% site area with native/adaptive vegetation. (For information only. This project did not meet the credit requirements.)

5.2 Provide a high ratio of open space to development footprint. Reduce by 50% of building footprint. OR; For areas with no zoning code provide open space equal to development footprint. Or; For areas with no zoning requirement provide 20%

open space of project area.













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] category

CREDIT 6: STORMWATER MANAGEMENT

- Intent
 - Limit disruption of natural water flows by:
 - Minimizing storm water runoff
 - Increasing on-site infiltration
 - Reducing contaminants
- 6.1 No net increase rate / quantity of runoff *OR* if existing imperviousness 50% implement plan to decrease 25%
- 6.2 Treatment systems designed to capture 90% storm water runoff of avg. annual rainfall and remove 80% TSS per *EPA BMP's for Nonpoint Pollution in Coastal Waters*. (For information only. This project did not meet the credit requirements.)







category

CREDIT 7: HEAT ISLAND EFFECT: NON-ROOF

Intent
 Reduce heat islands
 (thermal difference between developed / undeveloped areas)

Requirement

7.1 Shade within 5 yrs. 50% impervious non-roof surfaces

OR paving materials SRI of 29 for impervious non-roof surfaces

OR minimum of 50% parking underground

OR minimum of 50% open-grid paving system (imperviousness < 50%) for parking lot area















category

CREDIT 7: HEAT ISLAND EFFECT: ROOF

Intent
 Reduce heat islands (thermal difference between developed / undeveloped areas)

Requirement

7.2 Energy Star roof / low emissivity roofing for 75% OR install a "green" vegetated roof for 50% OR a combination of both.



For information only. This project did not meet the credit requirements.











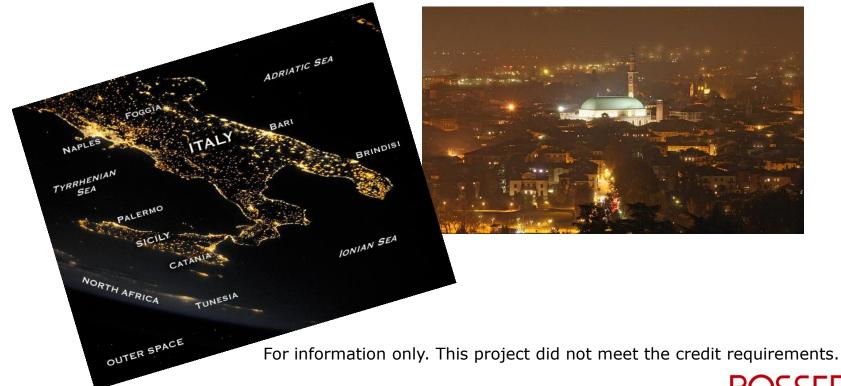




category

CREDIT 8: LIGHT POLLUTION REDUCTION

Intent
 Eliminate light trespass from the building and site.









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Z category

Goals

- Reduce the quantity of water required for building operations
- Reduce municipal water supply and treatment burden

Credits

- 3 credits for 5 points
- (7%) address:
 - Water Efficient Landscaping
 - Innovative WastewaterTechnologies
 - Water Use Reduction





2 category

CREDIT 1: WATER EFFICIENT LANDSCAPING

- Intent
 Limit or eliminate potable water for landscape irrigation
- Requirement
 - 1.1 Use 50% captured rain / recycled site water for irrigation *OR* high efficiency irrigation technology
 - 1.2 Use 100% captured rain / recycled site water for irrigation *OR* do not install permanent irrigation systems

















2 Itegory

CREDIT 2: INNOVATIVE WASTEWATER TECHNOLOGIES

Intent

Reduce: Generation of wastewater and Demand of potable

water

Increase: Local aquifer recharge

Requirement

Reduce municipally provided potable water for sewage by 50% *OR*

Treat 50% of wastewater on site to tertiary standards



For information only. This project did not meet the credit requirements.









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2 ategory

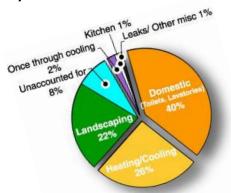
CREDIT 3: WATER USE REDUCTION

Intent

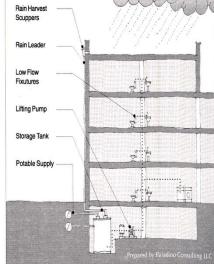
Maximize building's water efficiency, reducing burden on municipal water supply and wastewater systems

3.1 Use 20% less than the water baseline calculations for the building after meeting the *Energy Policy Act of 1992* fixture requirements

3.2 Exceed the potable water use reduction by an additional 10% (30% total)





















3 category

Goals

- Establish energy efficiency and system performance
- Optimize energy efficiency
- Encourage renewable and alternative energy sources
- Support ozone protection protocols

Credits

- 6 credits for 17 points
- (25%) address:
 - Energy Performance
 - Renewable Energy
 - Ozone Control
 - Green Power





3 category

PREREQUISITE 1: FUNDAMENTAL BUILDING SYSTEMS COMMISSIONING

Intent

Ensure fundamental building systems are properly:

- Designed
- Installed
- Calibrated to operate

Requirement

- Engage commissioning authority
- Develop design intent and basis of design documentation
- Include commissioning requirements in the Contract Documents
- Develop and utilize a commissioning plan
- Verify installation, performance, training & documentation
- Complete a commissioning report



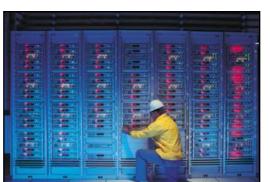
















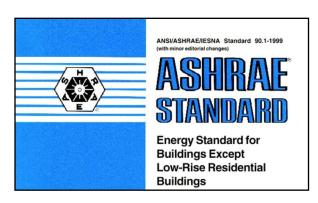
3 category

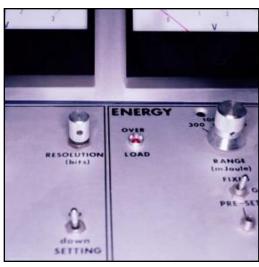
PREREQUISITE 2: MINIMUM ENERGY PERFORMANCE

Intent

Establish the minimum level of energy efficiency for the base building and systems

Design to meet ASHRAE 90.1-2004 or local energy code (whichever stricter)

















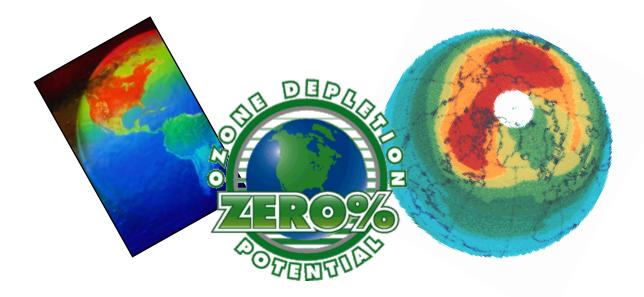


3 category

PREREQUISITE 3: CFC REDUCTION IN HVAC&R EQUIPMENT

Intent Reduce ozone depletion

Zero use of CFC-based refrigerants in new building HVAC&R systems











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CREDIT 1: OPTIMIZE ENERGY PERFORMANCE

Intent

Achieve increasing levels of energy efficiency above prerequisite standard, reducing excessive energy use environmental impacts

1.1 - 1.5 Reduce design energy cost compared to energy cost budget shown in ASHRAE 90.1-2004 requirements.

For new buildings:

- 10.5% (1 pt.)

- 28% (6 pts.)

- 14% (2 pts.)

- 31.5% (7 pts.)

- 17.5% (3 pts.) - 35% (8 pts.)

- 21% (4 pts.) - 38.5% (9 pts.)

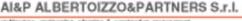
- 24.5% (5 pts.)

- 42% (10 pts.)















3 category

CREDIT 2: RENEWABLE ENERGY

Intent

- Encourage increasing levels of self-supply with renewable technologies
- Avoid environmental impacts from fossil fuel energy use
 - Solar
 - Geothermal
 - Wind
 - Biomass



For information only. This project did not meet the credit requirements.

Requirement

- 2.1 2.3 Supply a net fraction of building's energy use with *on-site* renewable systems:
 - 2.5% (1pt.)
 - 7.5% (2pts.)
 - 12.5% (3pts.)















3 category

CREDIT 3: ADDITIONAL COMMISSIONING

Intent

Ensure entire building is properly:

- Designed
- Constructed
- Calibrated to operate as intended





Requirement

- In addition to the prerequisite, implement the following:
- Review of design prior to Contract Documents
- Review of Contract Documents close to completion
- Selective review of contractor submittals of commissioned equipment
- Develop a system and energy management manual
- Contract for near-warranty end or post-occupancy review

For information only. This project did not meet the credit requirements.















3 ategory

CREDIT 4: ELIMINATION OF HCFC'S AND HALONS

Intent
 Reduce ozone depletion
 Support early compliance with the Montreal Protocol

Requirement

Install base building level HVAC&R/ fire suppression systems containing no HCFC's or Halons OR; Select refrigerants and HVAC&R minimizing / eliminating ozone depletion.

For information only. This project did not meet the credit requirements.











 $_{\scriptscriptstyle \sf category}$

CREDIT 5: MEASUREMENT AND VERIFICATION

- Intent
 - Provide ongoing accountability
 - Optimize building energy and water consumption

• Requirement

Develop a M&V Plan. Comply with installed equipment requirements for continuous metering as stated in US DOE's IPMVP: (Abbreviated listing)

- Lighting systems and controls
- Constant variable motor load
- Boiler / Chiller efficiency
- Cooling load













CREDIT 6: GREEN POWER

Intent

Encourage development and use of grid-source, renewable energy technologies on a net zero pollution basis

Provide 35% of the building's electricity from renewable sources - engage in an 2-year contract to purchase power generated from renewable sources (Sources must meet the Center for Resource Solutions Green-E requirements) For information only. This project did not meet the credit requirements.









Engineering

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Architecture Program Management





4

Goals

- Extend the life cycle of existing structure
- Divert construction waste from landfill
- Reduce the amount of materials required
- Use materials with less environmental impact
- Reduce and manage waste

Credits

- 7 credits for 13 points
- (19%) address:
 - Building Reuse
 - Construction WasteManagement
 - Material Reuse
 - Recycling Building Materials
 - Locally Manufactured Products
 - Renewable Materials
 - Certified Wood





4 category

PREREQUISITE 1: STORAGE & COLLECTION OF RECYCLABLES

Intent
 Reduce landfill deposit waste generated by building occupants

Requirement

- Provide easily accessible area serving entire building
- Area dedicated to separation, collection and storage of materials for recycling
- Materials included, at minimum:
 - paper, plastic, glass, metal and corrugated cardboard











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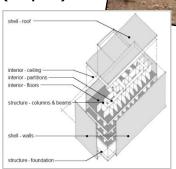
4 category

CREDIT 1: BUILDING REUSE

- Intent
 - Extend the life of existing building stock and conserve resources
 - Reduce waste and environmental impacts of new buildings in regards to material manufacturing and transport
- Requirement

Reuse large portions of existing structure during renovation or redevelopment

- 1.1 Maintain 75% of existing building shell (1 pt.)
- 1.2 Maintain 100% of existing building shell (1 pt.)
- 1.3 Maintain 100% of existing building shell
 AND 50% non-shell (1 pt.)



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4 category

CREDIT 2: CONSTRUCTION WASTE MANAGEMENT

Intent

- Divert construction, demolition and land clearing debris from landfill disposal
- Redirect recyclable material back to the manufacturing process

Requirement

Develop and implement a waste management plan, quantify material diversion by weight

- 2.1 Recycle / salvage at least 50% (by weight) of construction, demolition and land clearing waste
- 2.2 Recycle / salvage at least 75% (by weight) of construction, demolition and land clearing debris











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4 category

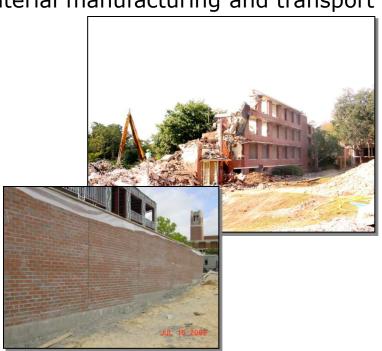
CREDIT 3: MATERIALS REUSE

Intent

Extend the life cycle of targeted building materials, reducing environmental impacts related to material manufacturing and transport

Requirement

- 3.1 Specify salvaged or refurbished materials for 5% of building materials (1 pt.)
- 3.2 Specify salvaged or refurbished materials for 10% of building materials (1 pt.)



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4 category

CREDIT 4: RECYCLED CONTENT

Intent

Increase demand for building products that have recycled content material, reducing environmental impacts from extraction of new material

Requirement

- 4.1 Specify minimum of 10% of the total value of building materials on the project contain recycled content:
 - Sum of post consumer recycled content + ½ pre-consumer = 10%
- 4.2 Specify minimum of 20% of the total value of building materials on the project contain recycled content:
 - Sum of post consumer recycled content $+ \frac{1}{2}$ pre-consumer = 20% For information only. This project did not meet the credit requirements.











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4 category

CREDIT 5: REGIONAL MATERIALS

Intent

Increase demand for locally manufactured building products:

- Support the local economy
- Reduce environmental impacts resulting from transportation

Requirement

- 5.1 Specify minimum of 10% of building materials *extracted*, *processed* & *manufactured* within a radius of 500 miles (1 pt.)
- 5.2 Specify minimum of 20% of building materials extracted, processed & manufactured within a radius of 500 miles (1 pt.)













4 category

CREDIT 6: RAPIDLY RENEWABLE MATERIALS

Intent

Reduce the depletion of finite raw and long cycle renewable materials

by replacing them with rapidly renewable materials

Requirement
 Specify rapidly renewable materials for 2.5% of total building materials









For information only. This project did not meet the credit requirements.















4 category

CREDIT 7: CERTIFIED WOOD

- Intent
 Encourage environmentally responsible forest management
- Requirement
 Use minimum of 50% wood-based materials certified in accordance

with the Forest Stewardship Council guidelines

















5 category

Goals

- Establish good indoor air quality
- Eliminate, reduce, and manage the sources of indoor pollutants
- Ensure thermal comfort and system controllability
- Provide for occupant connection to the outdoor environment

Credits

- 8 credits for 15 points
- (22%) address:
 - Outdoor Air Delivery
 - Effective Ventilation
 - Low Emitting Materials,
 Paints, Carpet, Composite
 Wood
 - Controllability of Interior and Exterior Systems
 - Occupant Comfort (Lighting / Thermal)
 - Daylight and Views





5 category

PREREQUISITE 1: MINIMUM IAQ PERFORMANCE

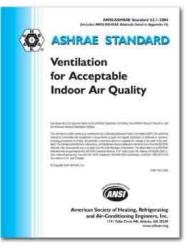
Intent

Establish minimum indoor air quality (IAQ) performance to:

- Prevent air quality problems in buildings
- Maintaining occupants' health and well being
- Requirement

Meet the minimum requirements of ASHRAE 62.1-2004,

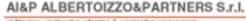
Ventilation for Acceptable Indoor Air Quality











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5 category

PREREQUISITE 2: ENVIRONMENTAL TOBACCO SMOKE CONTROL

Intent

Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS)

Requirement

Zero exposure to nonsmokers by:

prohibiting smoking in the building, designate smoking area
 at least 25' from entrances and air intake OR

providing designated smoking room designed to capture ETS

and remove from the building









Architecture
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Program Management

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5 category

CREDIT 1: OUTDOOR AIR DELIVERY MONITORING

Intent

Provide capacity for indoor air quality (IAQ) monitoring to sustain long term occupant health and comfort

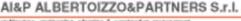
- Requirement
 - Install a permanent CO2 monitoring system providing:
 - feedback on space ventilation performance
 - allows for operational adjustments
 - Operational parameters maintain CO2 levels no higher than outdoor levels (530 parts per million at any time)

For information only. This project did not meet the credit requirements.















5 category

CREDIT 2: INCREASE VENTILATION EFFECTIVENESS

Intent

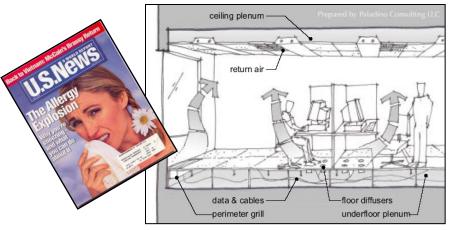
Provide effective fresh air delivery/mixing to building occupants to support health, safety and comfort of occupants

Requirement

Increase outdoor air ventilation rates by at least 30% above ASHRAE 62.1-2004, OR

Design natural ventilation systems to meet Carbon Trust Good

Practice Guide 237



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5 category

CREDIT 3: CONSTRUCTION IAQ MANAGEMENT PLAN

Intent

Prevent indoor air quality problems from construction and renovation and sustain long term occupant health and comfort

- Requirement
 - 3.1 Develop *IAQ Management Plan* (during construction/preoccupancy)
 - Meet or exceed SMACNA IAQ Guidelines
 - Protect stored on-site or installed absorptive materials from moisture
 - Replace all filtration media immediately prior to occupancy (MERV 13)
 - 3.2 Minimum 2 week building flush out (before occupancy) with new filtration media at 100% outside air OR conduct a baseline IAQ testing procedure consistent with EPA Research Triangle Park Campus. For information only. This project did not meet the credit requirements.



















5 category

CREDIT 4: LOW EMITTING MATERIALS

Intent

Reduce indoor air contaminants that are odorous or potentially irritating to occupant health and comfort

- Requirement (Each Credit = 1 pt.)
 - 4.1 Adhesives: Meet VOC South Coast Air Quality Rule Sealants: Meet Bay Area Resources Board Rule
 - 4.2 Paints/Coatings: Meet VOC limits of Green Seal
 - 4.3 Carpet: Meet CRI Green Label program
 - 4.4 Composite wood/agrifiber: No urea-formaldehyde











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5 category

CREDIT 5: INDOOR CHEMICAL / POLLUTANT SOURCE CONTROL

Intent

Avoid exposure of building occupants to potentially hazardous chemicals, adversely impacting air quality

• Requirement

- Employ permanent entryway systems to capture dirt (grilles, grates)
- Where chemical use occurs, provide:
 - Deck to deck partitions with separate outside exhausting
 - No air recirculation
 - Negative pressure
- Provide drains plumbed for appropriate disposal of liquid waste where water and chemical concentrate mixing occurs

For information only. This project did not meet the credit requirements.















5 category

CREDIT 6: CONTROLLABILITY OF SYSTEMS

Intent

Provide high level of individual occupant control of thermal, ventilation, and lighting systems, supporting optimum health, productivity and comfortable conditions

Requirement

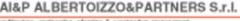
6.1 <u>Lighting</u>: Provide lighting controls for 90% minimum of building occupants and lighting system controllability for multi-occupant space (1 pt.)

 - 6.2 <u>Thermal Comfort:</u> Provide individual comfort controls for 50% of the building occupants, and comfort system controls for multioccupant space (1 pt.)
 <sub>For information only. This project did not meet the credit requirements.
</sub>













5 category

CREDIT 7: THERMAL COMFORT

Intent

Provide thermally comfortable environment that supports the productive and healthy performance of building occupants

- Requirement
 - 7.1 Comply with ASHRAE 55-2004, thermal comfort standards for humidity control within est. ranges per climate zone (1 pt.)
 - 7.2 Implement thermal comfort survey within 6-18 months after occupancy. Develop corrective action plan based on survey results (1 pt.)















5 category

CREDIT 8: DAYLIGHTING AND VIEWS

Intent

Provide connection between indoor spaces and outdoor environment through sunlight and views in occupied areas of building

Requirements

- 8.1 Minimum Daylight Factor of 2% in 75% of all spaces occupied for critical visual tasks (1 pt.)
- 8.2 Direct line of sight to vision glazing from 90% of all regularly occupied spaces (1 pt.)

For information only. This project did not meet the credit requirements.









AI&P ALBERTOIZZO&PARTNERS S.r.I

Architecture

Engineering



innovation and design



6 category

Goals

- Provide design teams and projects the opportunity to be awarded points for:
- Exceptional performance above and beyond the standards set by the LEED Green Building Rating System.
- Innovative performance in areas not specifically addressed by the LEED Green Building Rating System.

Credits

- 2 credits for 5 points (7%):
 - Innovation and Design /Exemplary Performance
 - LEED AP



innovation in design



6 category

CREDIT 1: INNOVATION IN DESIGN

Intent

Provide design teams and projects opportunity to be awarded points for:

- Exceptional performance above LEED requirements
- Categories not addressed by LEED

Requirement

- 1.1 1.4 Submit in writing *intent* of proposed credit, proposed *requirement* for compliance and *design approach*
 - 1.1 Exemplary Performance SS c 5.2 Site Development Maximize Open Space
 - 1.2 Exemplary Performance MR c 5.0 Local Regional Materials
 - 1.3 Green Building Education













innovation in design



6 category

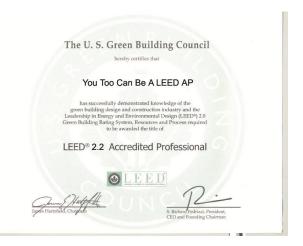
CREDIT 2: ACCREDITED PROFESSIONAL

Intent

Support and encourage design integration required by a LEED Green Building project and streamline the application and certification process

Requirement

At least one principal participant of project team has successfully completed the LEED Accredited Professional exam















LEED NC certification process



Steps to LEED Certification

REGISTER YOUR PROJECT



TRACK PROGRESS & DOCUMENT ACHIEVEMENT



APPLY FOR CERTIFICATION







